Work Order ID 95652

January-16-13 8:35:29 AM

95652

Item ID: D3997-31
Revision ID:
Item Name: Placard

Start Date: 1/16/13 **Start Qty:** 10.00 *10*
Required Date: 1/30/13 **Req'd Qty:** 10.00 *10*
Reference:

Accept *N900040100*

Setup Start *NS1*
Stop *NS2*

Cust Item ID:
Customer:

Approvals: **Process Plan:** MLS **Date:** 13-01-16 **Tooling:** **Date:**
QC: **Date:** **SPC (Y/N):** **Date:**

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr D3997	**Revision Nbr** A								
100		0.00							
100 Purchasing	**Memo** Issue P/O: 18849 Manufacture as per Dwg D3997 Possible Supplier:Studio Lettrage Material release note required	0.00							13-01-16
Purchasing									
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110 Packaging	**Memo**	0.00							13/01/21 (10
Packaging									
120	QC6- Inspect dimensions to drawing	0.00							
120 QC	**Memo**	0.00 B L21							10
Quality Control									

DAS 15 2-69

DQA: _____ Date: _____

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

- Rework ☐
- Scrap ☐
- Use-as-is ☐
- Work Order Update ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube	☐	Crosstube	☐	Water Jet	☐	Engineering	☐
Machining	☐	Small Fab	☐	Prod. Eng. Coor.	☐	Quality	☐
Thermoforming	☐	Finishing	☐	Rec/Store/Packaging	☐	Other	☐
Large Fab	☐	Composite	☐	Supplier	☐		☐

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	☐									
Equip/Tooling	☐									
Operator	☐									
Material	☐									
Setup	☐									
Other	☐									
Process	☐									
Supplier	☐									
Training	☐									
Unapproved	☐									

FAULT CATEGORY

Landing Gear

- ☐ Bending
- ☐ Centre Not Concentric to O/S
- ☐ Cracks
- ☐ Crushed/Crimped.
- ☐ Cuffs
- ☐ Heat Treat
- ☐ Inspection Strip in Tube
- ☐ Ripples in Bend
- ☐ Torque Waves in Extrusion
- ☐ Turning Sequence
- ☐ Wave/Twist in Tube

General

- ☐ Bend
- ☐ BOM/Route
- ☐ Broken/Damaged
- ☐ Burrs
- ☐ Contamination
- ☐ Countersink
- ☐ Cut Too Short
- ☐ Drill Holes
- ☐ Drawing
- ☐ Finish
- ☐ Folio
- ☐ Grain
- ☐ Hardware
- ☐ Inspection Incomplete
- ☐ Instructions Incomplete/Unclear
- ☐ Maintenance
- ☐ Mislabeled
- ☐ Misread
- ☐ Offset
- ☐ Out of Calibration
- ☐ Out of Sequence
- ☐ Outside Dimensions
- ☐ Ovalized
- ☐ Over/Under tolerance
- ☐ Part Incorrect
- ☐ Part Lost/Missing
- ☐ Part Moved
- ☐ Positioned Wrong
- ☐ Power Loss/Surge
- ☐ Pressure/Forced
- ☐ Temperature/Cure
- ☐ Weld
- ☐ Wrong Stock Pulled
- ☐ Other

_____

_____

_____

Work Order ID 95652

January-16-13 8:35:29 AM

95652

Item ID: D3997-31
Revision ID:
Item Name: Placard

Start Date: 1/16/13 **Start Qty:** 10.00 *10*
Required Date: 1/30/13 **Req'd Qty:** 10.00 *10*
Reference:

Accept *N900040100*

Setup Start *NS1*
Stop *NS2*

Cust Item ID:
Customer:

Run Start *NR1*
Stop *NR2*

Approvals: **Process Plan:** ____ **Date:** ____ **Tooling:** ____ **Date:** ____
QC: ____ **Date:** ____ **SPC (Y/N):** ____ **Date:** ____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: ~~ST243~~	0.00				10x			13-01-21
130									
Packaging	**Memo**	0.00							
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							13/1/23
140									
QC	**Memo**	0.00							
Quality Control									

13-01-21

DQA: _____ Date: _____

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

Rework	☐
Scrap	☐
Use-as-is	☐
Work Order Update	☐

AGAINST DEPARTMENT/PROCESS

Skid-tube	☐	Crosstube	☐	Water Jet	☐
Machining	☐	Small Fab	☐	Prod. Eng. Coor.	☐
Thermoforming	☐	Finishing	☐	Rec/Store/Packaging	☐
Large Fab	☐	Composite	☐	Supplier	☐

Engineering	☐
Quality	☐
Other	☐
	☐

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	☐									
Equip/Tooling	☐									
Operator	☐									
Material	☐									
Setup	☐									
Other	☐									
Process	☐									
Supplier	☐									
Training	☐									
Unapproved	☐									

FAULT CATEGORY

Landing Gear

☐	Bending
☐	Centre Not Concentric to O/S
☐	Cracks
☐	Crushed/Crimped.
☐	Cuffs
☐	Heat Treat
☐	Inspection Strip in Tube
☐	Ripples in Bend
☐	Torque Waves in Extrusion
☐	Turning Sequence
☐	Wave/Twist in Tube

General

☐	Bend
☐	BOM/Route
☐	Broken/Damaged
☐	Burrs
☐	Contamination
☐	Countersink
☐	Cut Too Short
☐	Drill Holes
☐	Drawing
☐	Finish
☐	Folio

☐	Grain
☐	Hardware
☐	Inspection Incomplete
☐	Instructions Incomplete/Unclear
☐	Maintenance
☐	Mislabeled
☐	Misread
☐	Offset
☐	Out of Calibration
☐	Out of Sequence
☐	Outside Dimensions

☐	Ovalized
☐	Over/Under tolerance
☐	Part Incorrect
☐	Part Lost/Missing
☐	Part Moved
☐	Positioned Wrong
☐	Power Loss/Surge

☐	Pressure/Forced
☐	Temperature/Cure
☐	Weld
☐	Wrong Stock Pulled
☐	Other

_____

_____

_____

Picklist Print

January-16-13 8:35:33 AM

Work Order ID: 95652

95652

Parent Item: D3997-31

D3997-31

Parent Item Name: Placard

Start Date: 1/16/13 **Required Date:** 1/30/13

Start Qty: 10.00 **Required Qty:** 10.00

Comments: IPP rev A 10.01.13 new issue Prelim EC verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D3997-31P		Purchased	No				Each	0.0000		10			
D3997-31P Placard									**				

1/30/13 10

DQA: _____ Date: _____

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: Date:

Work Order: _____

Part No. _____

NCR No. _____

DISPOSITION

- Rework ☐
- Scrap ☐
- Use-as-is ☐
- Work Order Update ☐

AGAINST DEPARTMENT/PROCESS

Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐
Machining ☐	Small Fab ☐	Prod. Eng. Coor. ☐	Quality ☐
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐
Large Fab ☐	Composite ☐	Supplier ☐	☐

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	☐									
Equip/Tooling	☐									
Operator	☐									
Material	☐									
Setup	☐									
Other	☐									
Process	☐									
Supplier	☐									
Training	☐									
Unapproved	☐									

FAULT CATEGORY

Landing Gear

- ☐ Bending
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- ☐ Cuffs
- ☐ Heat Treat
- ☐ Inspection Strip in Tube
- ☐ Ripples in Bend
- ☐ Torque Waves in Extrusion
- ☐ Turning Sequence
- ☐ Wave/Twist in Tube

General

- ☐ Bend
- ☐ BOM/Route
- ☐ Broken/Damaged
- ☐ Burrs
- ☐ Contamination
- ☐ Countersink
- ☐ Cut Too Short
- ☐ Drill Holes
- ☐ Drawing
- ☐ Finish
- ☐ Folio
- ☐ Grain
- ☐ Hardware
- ☐ Inspection Incomplete
- ☐ Instructions Incomplete/Unclear
- ☐ Maintenance
- ☐ Mislabeled
- ☐ Misread
- ☐ Offset
- ☐ Out of Calibration
- ☐ Out of Sequence
- ☐ Outside Dimensions
- ☐ Ovalized
- ☐ Over/Under tolerance
- ☐ Part Incorrect
- ☐ Part Lost/Missing
- ☐ Part Moved
- ☐ Positioned Wrong
- ☐ Power Loss/Surge
- ☐ Pressure/Forced
- ☐ Temperature/Cure
- ☐ Weld
- ☐ Wrong Stock Pulled
- ☐ Other

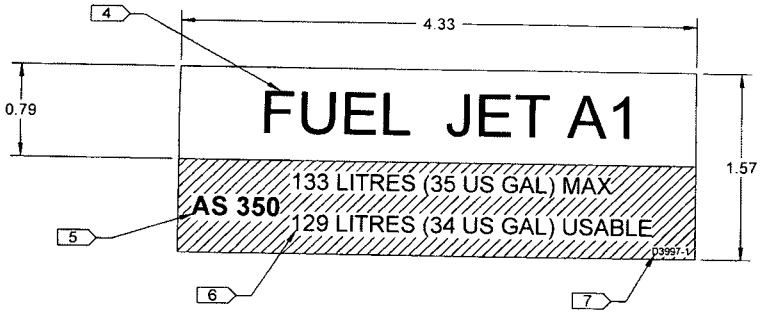
_____

_____

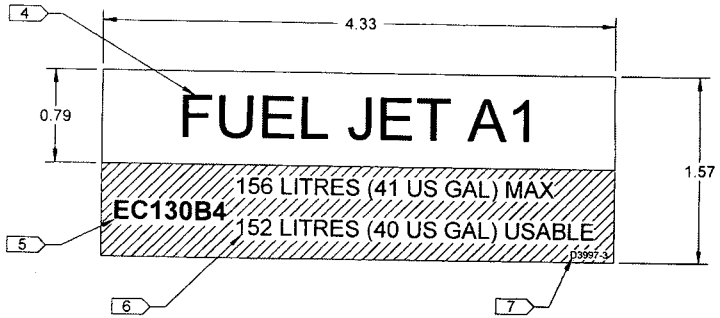
_____

DART AEROSPACE PART NUMBER	JOHN CAMERON AVIATION PART NUMBER
D3997-1	JCA-M47-P1
D3997-3	JCA-M47-P2

PART NUMBER	INSTALLATION INSTRUCTIONS
D3997-1	FOR AS350 AIRCRAFT - ADJACENT TO FUEL FILLER
D3997-3	FOR EC130 AIRCRAFT - ADJACENT TO FUEL FILLER



D3997-1 PLACARD



D3997-3 PLACARD

RELEASED
2010 -01- 11

NOTES:
1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
3) UNITS: INCHES UNLESS OTHERWISE NOTED
4) 36 PT FONT, BLACK TEXT ON WHITE BACKGROUND
5) 16 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
6) 14 PT FONT, WHITE TEXT ON BLACK BACKGROUND
7) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND

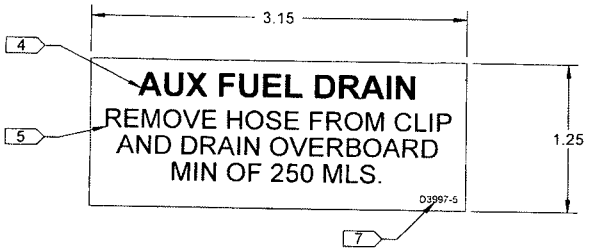
REV.	DESCRIPTION	BY	DATE
A	NEW ISSUE		09.10.05

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		DRAWING NO. D3997 REV. A
CHECKED		SHEET 1 OF 6
MFG. APPR.		TITLE PLACARD SCALE NTS
APPROVED		
DE APPR.		
DATE	09.10.05	

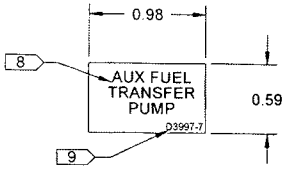
95652

DART AEROSPACE PART NUMBER	JOHN CAMERON AVIATION PART NUMBER
D3997-5	JCA-M47-P3
D3997-7	JCA-M47-P4
D3997-9	JCA-M47-P5
D3997-11	JCA-M47-P6

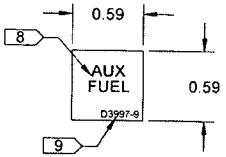
PART NUMBER	INSTALLATION INSTRUCTIONS
D3997-5	ON TANK ADJACENT TO FUEL DRAIN
D3997-7	ADJACENT TO PUMP SWITCH ON INSTRUMENT PANEL
D3997-9	IN AIRCRAFT SWITCH PANEL
D3997-11	ON TANK OUTBOARD SURFACE



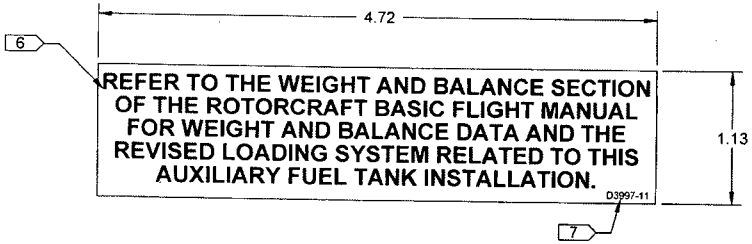
D3997-5 PLACARD



D3997-7 PLACARD



D3997-9 PLACARD



D3997-11 PLACARD

RELEASED
2010 -01- 11

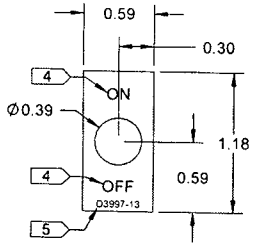
NOTES:
1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
3) UNITS: INCHES UNLESS OTHERWISE NOTED
4) 20 PT FONT, BLACK TEXT ON WHITE BACKGROUND
5) 16 PT FONT, BLACK TEXT ON WHITE BACKGROUND
6) 14 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
7) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND
8) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
9) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND

DESIGN		DART AEROSPACE LTD
DRAWN		HAWKESBURY, ONTARIO, CANADA
CHECKED		DRAWING NO. D3997 REV. A
MFG. APPR.		SHEET 2 OF 6
APPROVED		TITLE PLACARD SCALE NTS
DE APPR.		
DATE 09.10.05		

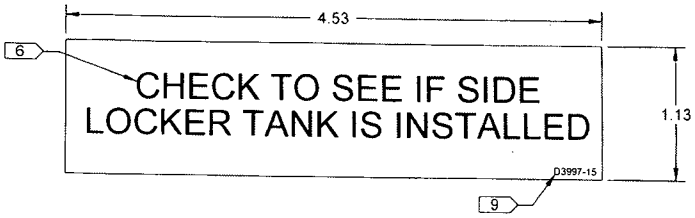
95652

DART AEROSPACE PART NUMBER	JOHN CAMERON AVIATION PART NUMBER
D3997-13	JCA-M47-P7
D3997-15	JCA-M47-P8
D3997-17	JCA-M47-P9
D3997-19	JCA-M47-P10

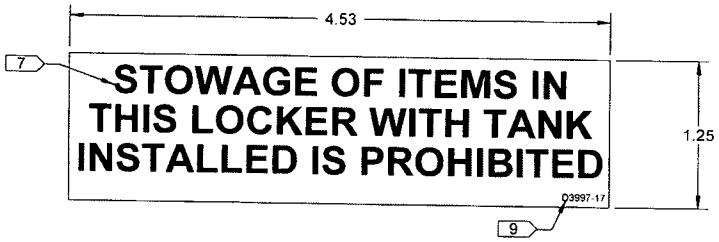
PART NUMBER	INSTALLATION INSTRUCTIONS
D3997-13	AROUND FUEL PUMP ON/OFF SWITCH
D3997-15	ON BAGGAGE LOCKER OUTER SURFACE BELOW RELEASE BUTTON
D3997-17	ON TANK OUTBOARD SURFACE
D3997-19	AT VENT LINE OUTLET ON AIRCRAFT



D3997-13 PLACARD



D3997-15 PLACARD



D3997-17 PLACARD

D3997-19 PLACARD

RELEASED
2010 -01- 11

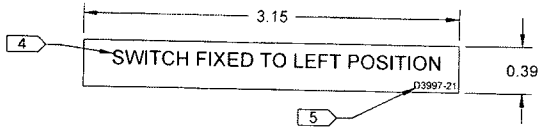
NOTES:
1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
3) UNITS: INCHES UNLESS OTHERWISE NOTED
4) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
5) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND
6) 22 PT FONT, BLACK TEXT ON WHITE BACKGROUND
7) 24 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
8) 18 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
9) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		DRAWING NO. D3997 REV. A
CHECKED		SHEET 3 OF 6
MFG. APPR.		TITLE PLACARD SCALE NTS
APPROVED		
DE APPR.		
DATE 09.10.05		

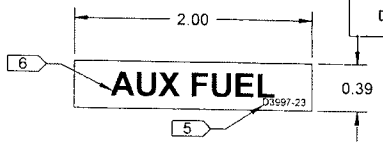
95652

DART AEROSPACE PART NUMBER	JOHN CAMERON AVIATION PART NUMBER
D3997-21	JCA-M47-P13
D3997-23	JCA-M47-P14
D3997-25	JCA-M47-P15
D3997-27	JCA-M47-P16

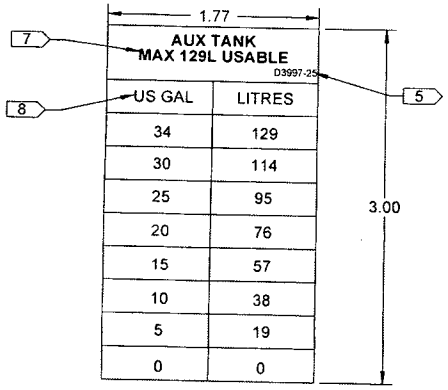
PART NUMBER	INSTALLATION INSTRUCTIONS
D3997-21	ON AUX FUEL GAUGE SWITCH PLATE
D3997-23	ON AUX FUEL GAUGE
D3997-25	NEXT TO AUX FUEL GAUGE (AS 350 ONLY)
D3997-27	NEXT TO AUX FUEL GAUGE (EC 130 ONLY)



D3997-21 PLACARD

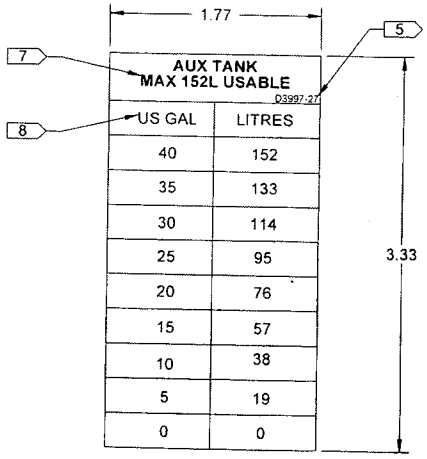


D3997-23 PLACARD



US GAL	LITRES
34	129
30	114
25	95
20	76
15	57
10	38
5	19
0	0

D3997-25 PLACARD



US GAL	LITRES
40	152
35	133
30	114
25	95
20	76
15	57
10	38
5	19
0	0

D3997-27 PLACARD

RELEASED
2010 -01- 11

NOTES:
1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
3) UNITS: INCHES UNLESS OTHERWISE NOTED
4) 12 PT FONT, WHITE TEXT ON BLACK BACKGROUND
5) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND
6) 20 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
7) 10 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
8) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND

DESIGN	
DRAWN	
CHECKED	
MFG. APPR.	
APPROVED	
DE APPR.	
DATE	09.10.05

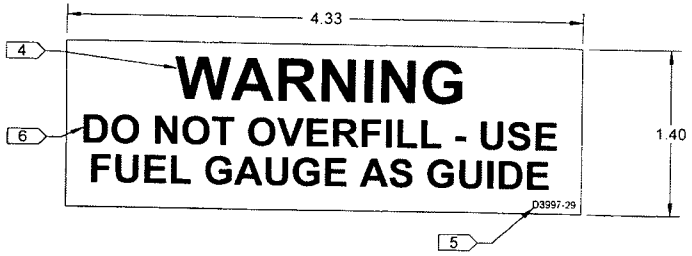
DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D3997 REV. A
SHEET 4 OF 6
TITLE PLACARD
SCALE NTS

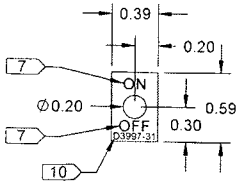
95652

DART AEROSPACE PART NUMBER	JOHN CAMERON AVIATION PART NUMBER
D3997-29	JCA-M47-P17
D3997-31	JCA-M47-P18
D3997-33	JCA-M47-P19
D3997-35	JCA-M47-P20

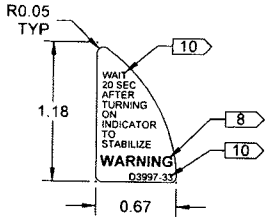
PART NUMBER	INSTALLATION INSTRUCTIONS
D3997-29	ADJACENT TO FUEL FILLER
D3997-31	AROUND AUX FUEL GAUGE ON/OFF SWITCH ON INSTRUMENT PANEL
D3997-33	ON AUX FUEL GAUGE COVER
D3997-35	ADJACENT TO AUX FUEL GAUGE ON/OFF SWITCH ON INSTRUMENT PANEL



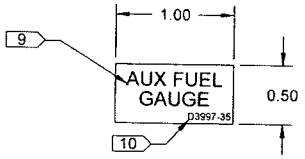
D3997-29 PLACARD



D3997-31 PLACARD



D3997-33 PLACARD



D3997-35 PLACARD

RELEASED
2010 -01- 11

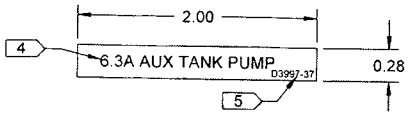
NOTES:
1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
3) UNITS: INCHES UNLESS OTHERWISE NOTED
4) 36 PT BOLD FONT, RED TEXT ON WHITE BACKGROUND
5) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND
6) 24 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND
7) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
8) 9 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
9) 12 PT FONT, WHITE TEXT ON BLACK BACKGROUND
10) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		DRAWING NO. D3997 REV. A
CHECKED		SHEET 5 OF 6
MFG. APPR.		TITLE PLACARD SCALE NTS
APPROVED		
DE APPR.		
DATE 09.10.05		

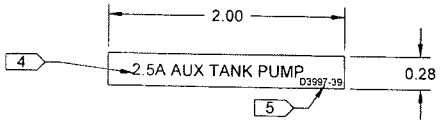
95652

DART AEROSPACE PART NUMBER	JOHN CAMERON AVIATION PART NUMBER
D3997-37	JCA-M47-P21
D3997-39	JCA-M47-P22
D3997-41	JCA-M47-P23
D3997-43	JCA-M47-P24

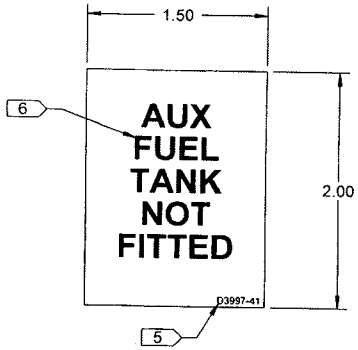
PART NUMBER	INSTALLATION INSTRUCTIONS
D3997-37	ADJACENT TO CB INSTALL
D3997-39	ADJACENT TO CB INSTALL
D3997-41	ON TANK ADJACENT TO FUEL FILLER
D3997-43	ON TANK EARTH POINT



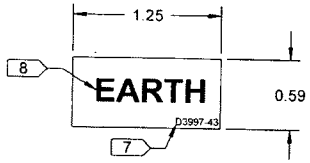
D3997-37 PLACARD



D3997-39 PLACARD



D3997-41 PLACARD



D3997-43 PLACARD

RELEASED
2010 -01- 11

NOTES:
1) MATERIAL: 3M 7 MIL MASKING FILM #8522CP OR AVERY IPM #2031
2) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
3) UNITS: INCHES UNLESS OTHERWISE NOTED
4) 10 PT FONT, WHITE TEXT ON BLACK BACKGROUND
5) 6 PT FONT, WHITE TEXT ON BLACK BACKGROUND
6) 20 PT BOLD FONT, WHITE TEXT ON BLACK BACKGROUND
7) 6 PT FONT, BLACK TEXT ON WHITE BACKGROUND
8) 20 PT BOLD FONT, BLACK TEXT ON WHITE BACKGROUND

DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN		DRAWING NO. D3997 REV. A
CHECKED		SHEET 6 OF 6
MFG. APPR.		TITLE PLACARD SCALE NTS
APPROVED		
DE APPR.		
DATE 09.10.05		

Studio de Lettrage

210 Main Street W
Hawkesbury, Ontario K6A 2H6

INVOICE

Invoice No.: 19413
Date: 01/18/2013
Ship Date: 01/17/2013
Page: 1
Re: Order No. WO9149

Sold to:

Dart Aerospace Ltd
1270 Aberdeen
Hawkesbury, Ontario K6A 1K7

Ship to:

Dart Aerospace Ltd
Hawkesbury, Ontario

Business No.: 82500 7651 RT0001

Item No.	Unit	Quantity	Description	Tax	Unit Price	Amount
		10	D3997-7P	H	8.00	80.00
		10	D3997-15P	H	8.00	80.00
		10	D3997-21P	H	8.00	80.00
		10	D3997-31P SMD	H	8.00	80.00
		10	D3997-35P	H	8.00	80.00
		10	D3997-39P	H	8.00	80.00
		10	D3997-41P	H	8.00	80.00
			PO # 18849			
			H - HST 13%			
			HST			72.80

Studio de Lettrage HST: #825007651RT0001

Shipped By: Tracking Number:

Comment:

Sold By:

Total Amount 632.80

******Certificate of Conformity******

Customer: Studio LeHrage

Purchase Order #:	**Packing Slip #:**	**Part #:**	**Serial #:**
18849	wo# 9149		

Description: ~~D3997-7R~~ / D3997-15P / D3997-21P / D3997-31P / D3997-35P / D3997-39P / D3997-41P

Quantity:

Certification:

We hereby certify that:

1. The above the listed items were manufactured, repaired and/or inspected in accordance with applicable drawings and/or specifications;

2. All work was accomplished in accordance with the Dart Aerospace Purchase Order;

3. Results of all inspections, chemical or physical tests, as well as other evidence, which shows the acceptability of raw materials, parts and/or assembly components are on file and available for inspection at any time.

Authority: 3M

APPROVAL: Sandy Collin

Signature: Sandy Collin

Title: Project coordinator

DATE: 18 Janvier 2013

3M

Product & Instruction Bulletin 8522

Release I, Effective September 2008
See Bulletin Change Summary and end of Bulletin
This Bulletin now includes Instruction Bulletin 4.23

Scotchcal™ Changeable Opaque Imaging Media 8522

For Thermal Inkjet Printing

Product Description

This durable, 7 mil, opaque, changeable film is optimized for use with selected thermal inkjet printers and inks. Ink dries quickly on the film. When overlaminated, it is warranted for medium term, outdoor weatherable graphics, and long term indoor graphics.

Recommended Types of Graphics and End Uses

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire Bulletin for details.

- First surface images (the image is on top of the film) for opaque posters and signs, including:
  - Graphics for vans, personal vehicles, trucks and buses
  - Novelty posters
  - Retail and point-of-purchase displays
  - Information graphics such as maps and directories
  - Entertainment promotions in museums, zoos, parks, theatres, sports venues
  - Education and presentation graphics
  - Legal and courtroom exhibits
- For flat or simple curved surfaces, with or without rivets, used in vertical (± 10°) applications

Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs or recommend other products.

Unsuitable End Uses for This Product

- Not for electronically cut individual letters and numbers
- Fleet applications in areas that use salt for winter road maintenance
- Application to non-warranted substrates, including wallboard
- Applications subjected to gasoline vapors or spills
- Application to corrugated or highly irregular surfaces or sharply raised areas
- Graphics applied to stainless steel, including stainless steel vehicles
- On flat surfaces with rivets, tenting of 4 to 10 mm around rivets may be expected; rivets may be cut around to eliminate tenting.
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

About Water-Based Inkjet Technology

Standard inkjet technology is water based. Water-based chemistry is susceptible to the extremes of heat and humidity. This is a factor in most product constructions on the market. Read the Fabrication, Shelf Life and Storage sections in this Bulletin. Staying in the middle of these ranges always provides optimum performance.

Compatible Products

3M Graphic Materials

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

This Bulletin provides details about the base film and construction options and warranty. Additional specific information about compatible products can be found in the Product and Instruction Bulletins listed in **3M Related Literature** at the end of this bulletin.

3M Graphic Materials

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See **3M Related Literature** at the end of this Bulletin.

Film

- 3M™ Scotchcal™ Opaque Imaging Media 8522

Overlaminate

- 3M™ Scotchcal™ Luster Overlaminate 8519
- 3M™ Scotchcal™ Matte Overlaminate 8520

Printers and Inks

HP Designjet Printers	HP Inks
• 2500CP and 2000CP 2800CP and 3800CP 3500CP and 3000CP • HP Designjet 5000 and 5500	• Designjet CP Ink System UV (pigment-based) • Designjet CP Inkjet System (imaging ink)
• Z6100	• HP 91 Vivera Ink System

Epson Printers	Epson Inks
• Stylus Pro 9500 • Stylus Pro 10000 printer • Stylus Pro 10600 printer	• Archival Inks

Characteristics

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

Characteristic	Description
Media	7 mil, white, opaque graphic film
Liner	Low-slippage, lay flat paper
Adhesive	Changeable, pressure sensitive
Thickness	**Media with adhesive:** 7.5 to 8 mil (nominal)
Warranted application substrates	See next page.
Application surfaces	Flat or simple curved surfaces, with or without rivets, used in vertical (± 10°) applications (no corrugations)
Application temperature range	28° to 110°F (-2° to 43°C) (air and surface)
Removable	For up to one year; see Warranty Information

Characteristic	Description
Warranted application substrates	Some substrates may "out-gas", resulting in tiny bubbles throughout the surface of the graphic. For maximum performance, be sure the substrate you select is properly cleaned and prepared as recommended by the manufacturer. See Instruction Bulletin 5.1 for additional information. • Alodine (anodized aluminum) • Automotive panels (automotive painted steel) • Fruehauf (painted aluminum) • FRP (fiberglass reinforced plywood) • Glass • Imron® (polyurethane-painted metal panel) • Acrylic • Sintra™ board Note: Use on any other substrate is strictly on a graphics manufacturer and customer test and approve basis. Test for both adhesion and removal characteristics. The plasticizer in some banner materials may migrate. This may cause the edge of the graphic to peel or lift off of the banner. For optimum performance, follow the guidelines in the section, Creating A Laminated Overlap, on page 4.

Warranty Information

The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor. **The warranties in the following table(s), given in years, are for finished graphics exposed in a vertical exposure in the United States except the Desert Southwest.** See the warranty sections following this table for additional information.

3M™ MCS™ Warranty
Durability for Finished Graphics

Construction (film and overlaminate on warranted substrate	HP Printers & Inks		Epson Printers & Inks		Removal
	Outdoor	Indoor	Outdoor	Indoor	
8522/8519 8522/8520	3 years	5 years	2 years	5 years	1 year without chemical strippers or tools

Warranty and Limited Remedy

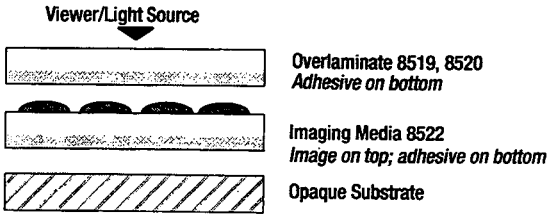
The following is made in lieu of all other express or implied warranties, including any implied warranty of **merchantability** or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade: all 3M products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin. 3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive. **In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.**

See the Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

Graphic Construction Options

Opaque Graphics

Opaque graphics made with imaging media 8522 require an overlaminate and an opaque substrate.



Fabrication

Different combinations of shop temperature and humidity can affect the handling of the media, the protective finish and the printed graphic. For optimum performance, use the *middle* of each of these ranges whenever possible.

Shop Temperature

Acceptable: 60° to 95°F (15° to 35°C)
Optimum: 65° to 73°F (18° to 23°C)

Shop Humidity

Acceptable: 20% to 80%
Optimum: 45% to 60%

Condition the Media Before Use

These steps are especially important if you are operating outside the conditions recommended under Fabrication, above.

- Leave the media in its original packaging until you are ready to condition and use it.
- The day before you need it, remove the media from the box and remove the plastic.
- Condition the media for 24 hours in the same environment as the printer.

Printer Settings for Optimum Quality

Refer to your Hewlett Packard printer manual for detailed operating instructions.

The quality of a printed image depends on a combination of factors: correct media selection, printing software and raster imaging processor (RIP), shop conditions, etc.

The printers qualified to use this media have print mode options that are programmed specifically for these media. Current charts that show the various modes and printing dpi, and the quality results you can expect are available at www.hp.com under the website's support section. We recommend that you print the same image at all of these settings to determine acceptable print and productivity results.

The highest quality settings are usually desirable for backlit applications.

The correct media selection makes most other necessary adjustments to the printer.

- For the HP DesignJet CP 2000 or 3000 series printers, select the **Opaque Vinyl UV** setting.
- For the HP Designjet 5000 series printers, select the **3M Changeable UV** setting or the HP **Durable Gloss UV** or HP **Colorfast Vinyl** setting.
- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

- For the HP DesignJet CP 2000 or 3000 series printers, select the **Opaque Vinyl UV** setting.
- For the HP Designjet 5000 series printers, select the **3M Changeable UV** setting or the HP **Durable Gloss UV** or HP **Colorfast Vinyl** setting.
- For the Z series printers, refer to HP's website or printer manuals.

Note: The HP printer settings lay down less ink per pass, which results in better ink absorption and quicker drying times.

Drying Guidelines

Usually, the media can be laminated within 10 minutes after printing. However, especially in high humidity conditions, we recommend waiting 15 to 30 minutes before laminating.

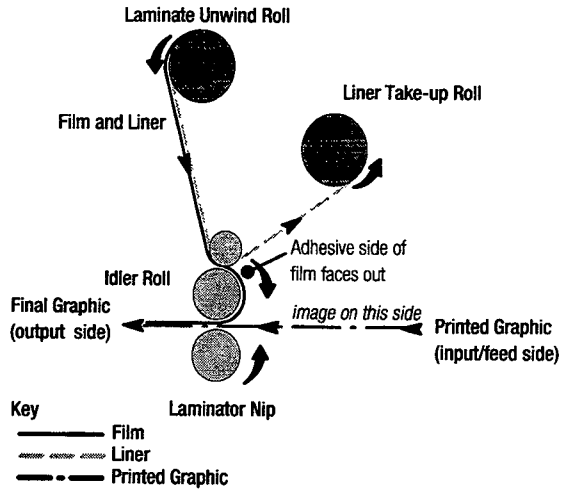
Use care when handling graphics that have not been laminated to avoid scratching and abrasion.

Graphics made with this media and ink combination typically may be wound directly on a take-up roll after printing.

Overlaminate

Whether or not you want a warranted graphic, an overlaminate is recommended to enhance durability, especially in outdoor applications.

FIGURE 1
Typical Laminator Thread-up



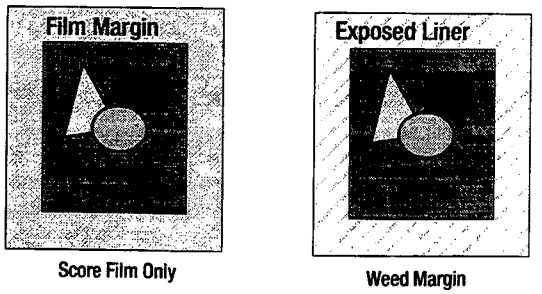
Creating a Laminated Overlap

Creating a laminated overlap helps ensure that the graphic does not peel or lift away from certain banner materials that may be subject to plasticizer migration. This method may also be used for flat, rigid or flexible sign applications.

1. Print the graphic as usual.
2. On all sides of the graphic, score *the film only* to the correct, final graphic dimension *without cutting through the liner.*

   Weed away the excess film, leaving the bare liner exposed around the graphic. See FIGURE 2.

FIGURE 2
Trim and Weed Film Margin Only



3. Laminate the graphic as usual (see page 5), making sure that at least one inch of the bare liner is covered by the laminate. See FIGURE 3.